a demodulator operable to demodulate the modulated signals to produce the first data stream and the second data stream,

wherein the first data stream has data for demodulation including the number of signal points of the constellation for the second data stream, and

said demodulator produces the second data stream according to the data for demodulation.

23. (Amended) A signal transmitting and receiving method comprising:

assigning each of a first data stream and a second data stream to a respective constellation in a vector space diagram to produce modulated signals wherein the number of signal points of the constellation for the first data stream is different from the number of signal points of the constellation for the second data stream;

transmitting the modulated signals;

receiving the modulated signals; and

demodulating the modulated signals to produce the first data stream and the second data stream,

wherein the first data stream has data for demodulation including the number of signal points of the constellation for the second data stream, and

said demodulating produces the second data stream according to the data for demodulation.

Please add new claims 24-35 as follows:

24. A signal transmission apparatus for transmitting a first data stream and a second data stream, comprising:

- a modulator operable to modulate the first data stream according to an m-level PSK modulation or an m-level QAM modulation, and modulate the second data stream according to an n-level PSK modulation or an n-level QAM modulation to produce modulate signals; and

- a transmitter operable to transmit the modulated signals,

wherein the first data stream includes information representing the value of n.

25. A signal transmission apparatus according to claim 24, wherein n is an integer and equal to or greater than m.

26. A signal receiving apparatus comprising:

- a receiver operable to receive a transmitted signal to produce a received signal;

wherein the transmitted signal has information of a first data stream and a second data stream, the first data stream is an m-level PSK modulated signal or an m-level QAM modulated signal, the second data stream is an n-level PSK modulated signal or an n-level QAM modulated signal, and the first data stream includes information representing the value of n; and

- a demodulator operable to demodulate the received signal to produce the first data stream and the second data stream, wherein

the second data stream is produced according to the information representing the value of n.

27. A signal receiving apparatus according to claim 26, wherein n is an inter and equal to or greater than m.

28. A signal transmission system comprising:

a signal transmission apparatus comprising:

- a modulator operable to modulate a first data stream according to an m-level PSK modulation or an m-level QAM modulation, and modulate a second data stream according to an n-level PSK modulation or an n-level QAM modulation to produce modulate signals; and

- a transmitter operable to transmit the modulated signals; and

a signal receiving apparatus comprising:

- a receiver operable to receive the modulated signals; and

- a demodulator operable to demodulate the modulated signals to produce the first data stream and the second data stream,

wherein the first data stream includes information representing the value of n, and

the second data stream is produced according to the information representing the value of n.

29. A signal transmission system according to claim 28, wherein n is an integer and equal to or greater than m.

30. A signal transmission method for transmitting a first data stream and second data stream, comprising:

- modulating the first data stream according to an m-level PSK modulation or an m-level QAM modulation, and modulating the second data stream according to an n-level PSK modulation or an n-level QAM modulation to produce modulate signals, and

-transmitting the modulated signals,

wherein the first data stream includes information representing the value of n.

31. A signal transmission method according to claim 30, wherein n is an integer and equal to or greater than m.

32. A signal receiving method comprising:

- receiving a transmitted signal to produce a received signal;

wherein the transmitted signal has information of a first data stream and a second data stream, the first data stream is an m-level PSK modulated signal or an m-level QAM modulated signal, the second data stream is an n-level PSK modulated signal or an n-level QAM modulated signal, and the first data stream includes information representing the value of n,

- demodulating the received signal to produce a first data stream and a second data stream, wherein

the second data stream is produced according to the information representing the value of n.

33. A signal receiving method according to claim 32, wherein n is an integer and equal to or greater than m.

34. A signal transmitting and receiving method comprising:

- modulating a first data stream according to an m-level PSK modulation or an m-level QAM modulation, and modulate a second data stream according to an n-level PSK modulation or an n-level QAM modulation to produce modulate signals;

- transmitting the modulated signals;

- receiving the modulated signals; and

- demodulating the modulated signals to produce the first data stream and the second data stream,

wherein the first data stream includes information representing the value of n, and

the second data stream is produced according to the information representing the value of n.

35. A signal transmitting and receiving method according to claim 34, wherein n is an integer and equal to or greater than m.